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Mild selective metathesis of alkane C-H bonds and C-X bonds of polyhalogenomethane CH4-nXn (X = Cl, n = 4; Br, I, n = 3) catalysed with chlorotris(triphenylphosphine)rhodium(I)

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Abstract

Alkanes RH (n-C6H14, cyclo-C6H12) and toluene react with polyhalogenomethanes CCl4, CHBr3 and CHI3 at 80-110 °C under catalysis with Wilkinson's complex, RhCl(PPh3)3, to produce halogenohydrocarbons RX and CHCl3, CH2Br2 or CH2I2 respectively with unusually high selectivity which decreases in the order: C-Hsecondry > > C-Hbenzylic > C-Hprimary.